

**CLAIMS:**

1. A naturally occurring low molecular weight adenosine A3 receptor agonist (LMW-A3Rag).
2. The LMW-A3Rag of Claim 1, obtainable from a vertebrate tissue or a  
5 vertebrate-derived cell by extraction in a liquid medium.
3. The LMW-A3Rag of Claim 2, obtainable from muscle tissue.
4. The LMW-A3Rag of Claim 1, obtainable from medium conditioned by vertebrate source cells.
5. The LMW-A3Rag of Claim 4, wherein said source cells are muscle cells.
- 10 6. The LMW-A3Rag of Claim 4, wherein said source cells are white blood cells.
7. The LMW-A3Rag of Claim 1, which is resistant to degradation by adenosine deaminase.
8. The LMW-A3Rag of Claim 1, having the following characteristics:
  - 15 (i) it is obtainable from animal-derived tissue or cells;
  - (ii) it filters through a filter with a maximal molecular weight cut-off of about 3,000 Daltons;
  - (iii) it is water soluble, heat stable, non-proteinaceous and resistant to adenosine deaminase activity.
- 20 9. A synthetic molecule having the same chemical structure as the agonist of Claim 1.
10. A pharmaceutical composition comprising as an active ingredient, a therapeutically effective amount of at least one naturally occurring LMW-A3Rag and a pharmaceutically acceptable excipient.
- 25 11. A pharmaceutical composition comprising, as an active ingredient, a therapeutically effective amount of the molecule of Claim 9.
12. The pharmaceutical composition of Claim 10 or 11, formulated in any form suitable for oral administration.

13. A method for a therapeutic treatment comprising administering to a subject in need an effective amount of a naturally occurring A3Rag for achieving a therapeutic effect, the therapeutic effect comprises inhibition of adenylate cyclase in target cells.

5 14. The method of Claim 13, wherein said LMW-A3Rag is administered in combination with an additional therapeutic treatment.

15. The method of Claim 13 or 14, wherein said LMW-A3Rag is administered orally to the subject in need.

16. A method for a therapeutic treatment comprising administering to a subject  
10 in need an effective amount of a molecule according to Claim 9.

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